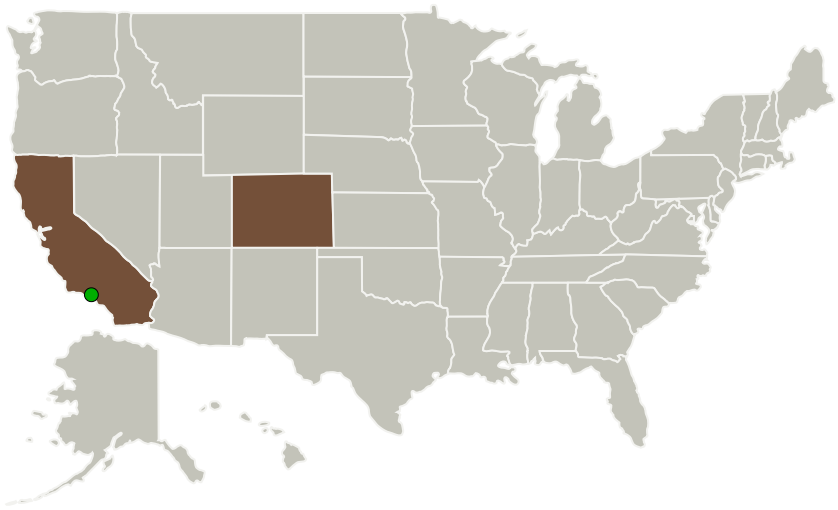
Robust Frequency Combs and Lasers for Optical Clocks and Sensing, Phase II

Completed Technology Project (2016 - 2018)

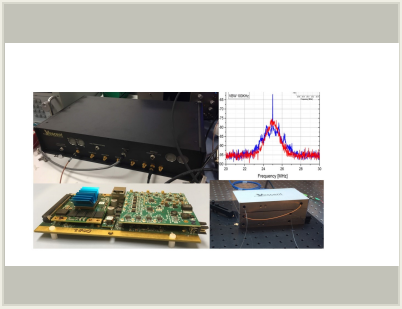
Project Introduction

Vescent Photonics proposes to bring an environmentally robust, compact, high fidelity frequency comb to the commercial market. This will be comb based on a NIST design, augmented with a high bandwidth graphene modulator. Vescent will partner with MRADS, a CU spin-off commercializing high bandwidth graphene modulators for mode-locked lasers. These modulators will both improve performance of the NIST comb and also give Vescent the freedom to operate in the commercial market. These devices will be incorporated into the packages developed during this Phase I and will be a central component of the final deliverable: a pair of high fidelity frequency combs.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Vescent Photonics, Inc.	Lead Organization	Industry	Arvada, Colorado
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California



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Primary U.S. Work Locations	
California	Colorado

Project Transitions

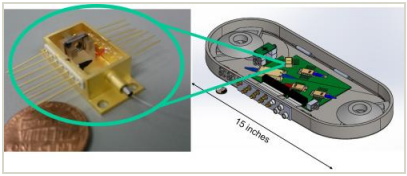
May 2016: Project Start

November 2018: Closed out

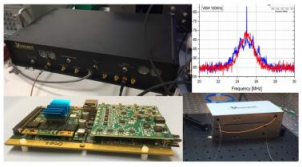
Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139739)*

Images



Briefing Chart Image
Robust Frequency Combs and Lasers for Optical Clocks and Sensing, Phase II
(https://techport.nasa.gov/image/130763)



Final Summary Chart Image
Robust Frequency Combs and Lasers for Optical Clocks and Sensing, Phase II
(https://techport.nasa.gov/image/134397)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Vescent Photonics, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Mark Yeo

Co-Investigator:
Juan M Pino

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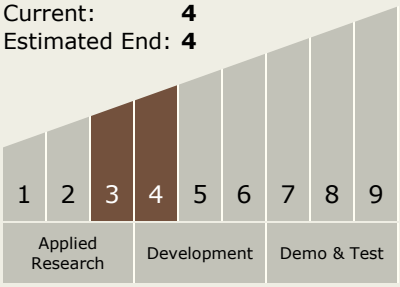
Completed Technology Project (2016 - 2018)

Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System